Before conducting the EFVM® procedure, it is essential that the membrane surface is wet. If the surface is dry at the time of the test, then water needs to be sprayed over all the areas to be tested. If the area is sloped and free draining, the water supply needs to be continuous.

The “Vector-9” conductor wire is set out in a rectangular loop around the area to be tested and an EFVM® impulse generator is connected to the conductor wire. Every three (3) seconds a 40-volt potential is being delivered for a period of one (1) second. An electrical potential difference is set up between the membrane surface, which is wet, and the structural deck, which is earthed or grounded. If there are any breaches in the membrane, then the small electric current will flow across the membrane surface and down through the breach to the earthed structural deck. Using a EFVM® potentiometer connected to two probes, the direction of the current can be identified and, thus, by moving the probes, any breach can be pinpointed. Because of the high electrical resistance through the membrane, the magnitude of the electrical current is relatively small. However, not the magnitude of the current is important, but rather the direction in which it flows, leading the EFVM® technician to the breach.

The above method is, of course, a simplified description of what takes place during the test. The EFVM® technician needs intensive training and experience to be able to pinpoint all breaches and even capillary defects and to work around difficulties associated with an electrical testing system.